BSc Information Technology

2nd Semester | Mathematics-II | Paper -202

Maximum Marks,. 80 | Min.Pass Marks 32` | Time allowed 2 ½ hours

Note: Attempt all questions from Sections A and B and only two questions from Section C.

Section A(Very short answer type questions, each to be answered in about 20 words) 8x2=16

1. i) What are disjoint sets. Give an example.
   ii) If $f(x)= 3x^2+2x-2$, Find $f(-1)$, $f(-\frac{1}{2})$.
   iii) Evaluate:
   $$\lim_{x \to 1} \frac{x^2-1}{x-1}$$
   iv) Define continuity of a function at a point.
   v) If $y=\frac{1}{\sqrt{x}}$, Find $\frac{dy}{dx}$
   vi) Evaluate:
   $$\int (e^{3x}+1)\, dx$$ $e^{3x}+1$
   vii) What do you mean by a conditional statement.
   viii) Find the dual form of the statement:
   $(x+y) = x.y$

Section B(Short answer type questions, each to be answered in about 250 words) 4x8=32

2. If $A=\{1,4\}$, $B=\{4,5\}$, $C=\{5,7\}$, Find
   i) $(A \times B) \cup (A \times C)$
   ii) $(A \times B) \cap (A \times C)$

3. Evaluate: $\lim_{x \to 0} \frac{\sqrt{1+x}-\sqrt{1-x}}{x}$

4. Find the derivative of Cosx by first principal.
5. Prove, using Boolean algebra:
   i) a+1 =1
   ii) a+a.b=a

Section C(Long answer type questions, each to be answered in about 250 words) 2x16=32

6. a) Define a power set. Find the power set of :
   i) {a,b,c} ii) {(a,b),c}
   b) Draw the graph of the function: y=1x1

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